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ABSTRACT OF THE DISCLOSURE

5 An acoustic wave sensor/resonator utilizes a torsional wave trapped in an acoustic wave cavity that is formed in a noncylindrical substrate. An acoustic wave transducer is positioned adjacent the acoustic wave cavity off of the centerline of the cavity and in a plane parallel to a planar surface of the acoustic wave cavity to generate the torsional wave. The acoustic wave transducer can be a piezoelectric transducer or an electromagnetic transducer. Further, the torsional wave can be generated by a single transducer or multiple transducers.